

Clean Air Interstate Rule NOx Allocation Structures

I. Basic Allocation Structures

Four potential structures for the allocation of the CAIR NOx allowances (both Annual and Ozone Season) are being discussed in Wisconsin. They are:

- A. **Federal implementation plan (FIP):** The FIP implements the CAIR trading program at the federal level and there is no state involvement. The program follows the CAIR model rule except the USEPA implements and runs all aspects of the trading program including the allocation of the NOx allowances.
- B. **Wisconsin's preliminary proposal "Option 1":** Wisconsin's preliminary proposal for NOx allocation structure was one of two options presented at public information meetings on March 29, 2006, April 5, 2006 and April 6, 2006. It changes some of the aspects of the model rule for the NOx allocation structure.
- C. **Wisconsin Utilities Association "Option 3":** In response to Wisconsin's preliminary proposal presented at the public information meetings, the Wisconsin Utilities Association submitted "Option 3" as a proposed NOx allocation structure. Most of Option 3 mirrors the structure of the FIP.
- D. **Proposed Draft Rule:** A proposed draft rule, incorporating the Department's responses to comments received, will go to the Natural Resource Board for hearing authorization in August 2006. The proposed draft rule structure is subject to modification prior to the Natural Resource Board meeting. Wisconsin DNR proposes using the "abbreviated SIP" option which allows the State to use the FIP to control all aspects of the CAIR program except the NOx allocations.

See attached table for a comparison of specific aspects of the different allocation structures.

II. Calculation of Allocations

All four allocation structures use the same basic equation:

$$\text{Unit's allocation} = (\text{Unit's Baseline} / \text{State Total Baseline}) * \text{Main Allocation Pool (MAP)}$$

where:

State Total Baseline	= Sum across the state of all units baselines
Main Allocation Pool	= (State Budget allocated by USEPA) – Set-aside

A. Calculating Unit and State Baselines

Under the CAIR, an existing unit is a unit that commenced operation before January 1, 2001. A new unit is a unit that commenced operation on or after January 1, 2001. In the FIP and Option 3, allocations to existing sources are based on heat input and allocations to new sources are based on electrical output. Under Option 1 and the draft rule proposal, allocations to both existing and new units are based on gross generation.

Under the FIP and Option 3 and the proposed draft rule, the unit baseline is calculated by averaging the highest three years over 5 years of operating data. Option 1 averages 3 years of operating data.

The state baseline in all four program structures is the sum of all covered unit baselines across the state.

B. Updating State and Unit Baseline

Under the FIP, the state total baseline is updated to include new units that have operated long enough to establish baselines. The update occurs in 2011 and every year thereafter.

Under the proposed draft rule, both the state total baseline and the unit baseline are updated. The state total baseline is updated on the same timeline as under the FIP. The unit baseline is updated to reflect changes in the generation market and reward energy efficiency; it is updated in 2011 and every five years thereafter.

C. Fuel Weighting

Fuel weighting or “fuel adjustment factors” weight the allocation of allowances based upon the type of fuel the unit primarily burns. The fuel adjustment factor allocates more allowances to coal-fired plants that inherently have higher emission rates which consequently have the greater compliance burden. The FIP and Option 3 use fuel weighting in calculation of allocations. For instance, coal receives the greatest weight in the distributing allocations under the FIP and Option 3.

D. Allocation Equations for Each Allocation Structure for Existing Sources

1. Federal Implementation Plan

Unit Baseline	=	Average of 3 highest years over 5 year period of heat input data
Adj. Unit Baseline	=	Unit Baseline * Fuel Adj. Factor
Allocation	=	(Adj. Unit Baseline/State Baseline) * Main Allocation Pool

2. Option 1

Unit Baseline	=	Average of 3 years of gross generation data
Allocation	=	(Unit Baseline/State Baseline) * Main Allocation Pool

3. Option 3

Unit Baseline	=	Average of 3 highest years over 5 year period of heat input data
Adj. Unit Baseline	=	Unit Baseline * Fuel Adj. Factor
Allocation	=	(Adj. Unit Baseline/State Baseline) * Main Allocation Pool

4. Proposed Draft Rule

Unit Baseline	=	Average of 3 highest years over 5 year period of gross generation data
Allocation	=	(Unit Baseline/State Baseline) * Main Allocation Pool

III. New Unit Set-Aside

There are a number of barriers to entry to the electricity generation business. A new unit set-aside allows new units to receive some or all of the allowances needed to operate in the initial years and not have to buy on the market. Buying all compliance allowances from the market creates a margin of uncertainty regarding availability and cost. In the FIP, Option 3 and the proposed draft rule, any unused amount of the new unit set-aside is redistributed to the main allocation pool. Option 1 proposes to bank these allowances for future use. The proposed draft rule allows new renewable units to apply for allowances from the new unit set-aside and to receive allowances from the main allocation pool once the unit has established a baseline. The size of the new unit set-aside is based upon a conservative estimate of the projected new generation in Wisconsin.

IV. Combined Heat and Power

Combined heat and power units (CHPs), also known as cogeneration units, generate power and thermal energy from a single fuel source. Under all of the rule structures, CHPs receive some allowances based on the thermal energy produced. Under the FIP and Option 3, a CHP's baseline is calculated by discounting the thermal energy using an assumed efficiency rate of 80% where the electricity generation is assumed to have 100% efficiency rate. Under the draft rule, both thermal energy and electricity generated have an assumed efficiency rate of 100%.

V. Compliance Supplement Pool

The compliance supplement pool (CSP) is a group of 2009 vintage year allowances available in the NOx Annual program over and above the budget allocated to Wisconsin. Wisconsin has been allocated 4,898 CSP allowances. The FIP distributes the CSP to units that apply for the allowances based upon early emission reductions or based on extreme hardship using the criterion outline below. CSP allowances that are not allocated in 2009 are permanently retired.

Distribution based on Early Reduction – Under the EPA federal model rule, a unit may apply for early reduction credits from the CSP if the following criteria are satisfied:

- the unit's average annual NOx emission rate from 2007 or 2008 is less than 0.25 lb/mmBtu;
- the unit is included in a NOx averaging plan under the Acid Rain Program for such year;
- the unit's NOx averaging emission rate for such year is equal to or less than the actual weighted average NOx emission rate for the year before such year; and
- the unit achieves NOx emission reductions in 2007 and 2008.

Distribution based on Extreme Hardship – The EPA's determination of extreme hardship is based on whether "the compliance with CAIR NOx emissions limitation for the control period in 2009 would create an undue risk to the reliability of electricity supply during such control period." The demonstration by the generator must include a showing that it would not be feasible for the owners and operators of the unit to:

- obtain a sufficient amount of electricity from other electricity generation facilities; or
- obtain sufficient amount of CAIR NOx allowances to prevent such undue risk.

Under the proposed draft rule, there would be no compliance supplement pool.

Comparison of Federal Implementation Plan, Wisconsin's Preliminary Proposal, Utilities Association Recommended Option and Proposed Draft Rule

	Federal Implementation Plan	Wisconsin's Preliminary Proposal "Option 1"	Utilities Association "Option 3"	Proposed Draft Rule
Allocation basis- existing units	Heat input	Electrical output	Heat input	Electrical output
Allocation basis- new units	Electrical output	Electrical output	Electrical output	Electrical output
Data used for baseline	Highest three years of five years of data	Average of three years of data	Highest three years of five years of data	Highest three years of five years of data
Updating unit baseline	Permanent, once established	Updated every three years	No proposal at this time	2011 and every five years thereafter
Updating state total baseline	2011 and every year thereafter	Updated every three years	Updated every three years	2011 and every year thereafter
Level of allocation	Unit level	Unit level	Unit level	Unit level
Reallocation	2011 and every year thereafter	Every three years	Every five years	2011 and every year thereafter
Length of allocation	Initial 2009-2014 allowances allocated, then four years in advance of vintage yr starting in 2011	Three years	Five years	Initial 2009-2014 allowances allocated, then four years in advance of vintage yr starting in 2011
Fuel weighting	1.0 for Coal 0.6 for Oil 0.4 for all others	No fuel weighting	1.0 for Coal 0.6 for Oil 0.4 for all others	No fuel weighting
New unit set-aside	Phase I: 5% Phase II: 3%	Phase I: 5% Phase II: 3%	Phase I: 5% Phase II: 5%	Phase I: 7% * Phase II: 7% *
RE/EE source set-aside	No RE/EE set-aside	Phase I: 3% Phase II: 5%	No RE/EE set-aside	No separate RE/EE set-aside
Treatment of Clean Coal Projects	No preference	Preference in new unit set-aside allocation	No preference	No preference
Oversubscription to set-aside	Pro-rata reduction	Preference in new unit set-aside for clean coal; Pro-rata reduction	Pro-rata reduction	Pro-rata reduction
Undersubscription to set-aside	Re-distribution to the main allocation pool	Banked for future use in the set-aside	Re-distributed to the main allocation pool	Re-distribution to the main allocation pool
Treatment of CHP	Boiler units: Total Thermal Output/ 0.8 Combustion Turbines: (Total thermal output/0.8) + (Electrical generation * 3,413 btu/KWh	All units: Generation Output + (Thermal output/ 3.4 mmBtu/MWh)	Boiler units: Total Thermal Output/ 0.8 Combustion Turbines: (Total thermal output/0.8) + (Electrical generation * 3,413 btu/KWh	All units: Generation Output + (Thermal output/ 3.4 mmBtu/MWh)
Compliance Supplement Pool	Allocated based upon early reductions or extreme hardship	Retired from use	Allocated based upon early reductions or extreme hardship	Retired from use

* Under the proposed draft rule, new renewable projects would be allowed to apply to the new unit set-aside for allowances. Under the Utilities Association's Option 3, only new fossil fueled fired units would be eligible for the new unit set-aside. An energy efficiency project set-aside has been eliminated from the draft rule. Energy efficiency and the resulting emission reductions is covered by an updated baseline based on electrical output.